

REMARKS

Status.

Applicant kindly requests that the entry of the amendments to the specification, drawings, and claims in the Preliminary Amendment filed on February 10, 2003 be confirmed as being entered into the case.

The Office Action Summary cites only the filing of the application on 08 November 2002. No acknowledgment of the Preliminary Amendment is found in either the Office Action Summary or in the text of the Office Action itself.

1. Abstract of the Disclosure.

Applicants have amended the abstract to change the legal phraseology “comprises” to – has – as required by the Examiner.

2. Rejection of Claims 1 and 10-11 under 35 USC 112, Second Paragraph.

Claim 1. The Examiner states that it is unclear what is meant by “means of electrodes”. Applicants note that the Examiner’s concern appears to come from the use of the English idiom “by means of”. The meaning of “by means of” is given in the American Heritage Talking Dictionary, 1997 (Attachment A). The idiom “by means of” means “with the use of”. Other equivalent meanings are “through”, “by”, “by using”, “with”. Thus in claim 1, the electric field is applied to the electro-optic crystal **with the use of** electrodes, or **by using** electrodes, or **by** electrodes, or **with** electrodes, or **by means of** electrodes. All of these are equivalent English terms. The electrodes referred to in claim 1 for applying the electric field are positive (hot) electrodes 35, 35' and ground electrode 37. These electrodes are shown in Fig. 9 and discussed in previously amended paragraph 52. Biasing positive electrodes 142, 142' and ground electrode 144 are used for setting the operating point of the device at point A or point B as shown in the graph of Fig. 10. The biasing electrodes 142, 142' and 144 are not claimed in Claim 1.

In view of the common English meaning of the idiom “by means of” and the discussion of electrodes 35, 35' and 37 in the specification as noted above, it is believed that the phrase “an electric field applied to said electro-optic crystal **by means of** electrodes . . .” is clear and definite as required by 35 USC 112, second paragraph.

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Claims 10 and 11. Previously amended claims 10 and 11 are stated as being incomplete since claim 10 only claims a voltage lookup table 101 for correcting the output voltage and claim 11 only claims a frequency lookup table 103 (Figs. 1 and 17) for correcting the output voltage. The Examiner states that both the frequency lookup table and the voltage lookup table must be included in each claim.

In response, applicants note that it is not necessary to correct for both frequency and voltage when operating the present invention. In fact, it is not necessary to correct for frequency and voltage at all. For example, if one desires only approximate ac root-mean-square (RMS) values, lookup tables need not be used at all. If one desires to determine a wide variety of voltages, e.g., 1 mV to 1 Kv at approximately the same frequency, it is possible to use the voltage lookup table values for voltage only and not use a frequency lookup table since the frequency correction can be set to zero for the narrow frequency range of interest during manufacture of the device. Likewise, if one is determining approximately the same voltage values over a wide range of frequencies, the use of a frequency lookup table becomes important while the correction for the narrow voltage range of interest can be set to zero during device manufacture. Of course, if the device is used to accurately determine voltages having both a wide frequency range and a wide voltage range, then both frequency lookup tables and voltage lookup tables should be used.

It is to be noted that the claims are not required to teach how to make or use the invention or to include all of the components of the preferred embodiment. Such requirements are left to the specification. All that the claims need do is to set forth the legal boundaries of applicants invention. In the present case, it is quite possible to make a device that uses only a voltage lookup table or one that uses only a frequency lookup table. There is no requirement that both be used and therefor it is unnecessary to provide for both in the same claim.

For the above reasons, applicants submit that claims 10 and 11, requiring only a voltage lookup table or only a frequency lookup table are complete and allowable under 35 USC 112, second paragraph.

Finally, it is noted that claims 1, 10, and 11 are all independent claims and that there are no dependent claims that share the same indefiniteness as the rejected base claims.

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3-5. Rejection of one of more of claims 16-20 under 35 USC 102 on the basis of Booth et al or Johnson et al.

Applicants have canceled claims 16-20 without prejudice.

6-7. Nonstatutory Obvious Double Patenting Rejection of Claims 1 and 8.

Applicants include a terminal disclaimer along with the disclaimer fee to overcome this rejection. Although the enclosed fee payment check is believed to be correct, any fee shortages or overages may be charged or applied to applicants deposit account, 13-3393.

8-9. Same Invention Double Patenting Rejection of Claims 2-4 and 12 under 35 USC 101.

The Examiner states that claims 2-4 and 12 claim the same invention as claims 1, 5-6 of prior US Patent No. 6,479,979 (hereafter the '979 patent).

The court in the *In re Vogel* case (164 USPQ 619) cited by the Examiner gives clear guidance as to the law of double patenting under 35 USC 101. The court stated that "by 'same invention' we mean identical subject matter (emphasis added)." The court stated that an "invention defined by a claim reciting 'halogen' is not the same as that defined by a claim reciting 'chlorine' because the former is broader than the latter. On the other hand, the court noted that a claim reciting "thirty-six inches" would define the same invention as a claim reciting "three feet" if all other limitations were identical. Finally the Vogel court stated that an objective test for the "same invention" is "whether one of the claims could be literally infringed without literally infringing the other. If it could be, the claims do not define identically the same invention (emphasis added)."

Applying the Vogel broader and narrower claim test, it is apparent that claim 1 from the parent case (US Patent No. 6,479,979; hereafter '979) is a broad claim while claim 2 in the present application is a narrow claim. In fact, independent claim 2 in the present application was originally presented as dependent claim 5 in the parent case depending from issued claim 1 of the '979 patent.

As shown below in Table 1, a comparison of issued claim 1 with claim 2 shows immediately the difference. The last lines of claim 2 contain the additional limiting language "and wherein said third voltage is used to control the intensity of said light source." In issued claim 1, the third voltage 62 is returned to the electric field-to-light-voltage converter that includes the light source 20, the

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electro-optic material 31, and the electric field. Issued claim 1 is broad in that third voltage 62 can be used to control any of: 1) the light source 20, 2) the electro-optic material 31, or 3) the electric field to produce the root-mean-square voltage 54 of the applied electric field. In present claim 2, the third voltage 62 is limited only to the control of the light source 20 as shown in Fig. 2 to produce the root-mean-square voltage 54. Because issued claim 1 is broader than claim 2, the claims are not the same and therefore do not claim the same invention as required by the Vogel broader and narrower claim test.

As to the Vogel infringement test, one could construct a device in which the third voltage 62 is used to control the electro-optic material or the electric field. Such a device would infringe issued claim 1 but it would not infringe the claim 2 which specifically requires that the third voltage 62 control the intensity of the light source.

Dependent claims 3 and 4 which further limit claim 2 and incorporate all of the limitations of claim 2 are also not identical to claims 5 and 6 of the issued patent for the reasons state above with respect to claim 2.

As to present claim12 and issued claim 1, the differences between the two claims are apparent from a brief inspection of section d) of both claims set forth below.

Section d) from granted claim 1 of the '979 patent:

d) an inverse ratiometric circuit [60] receiving said second voltage [52] from said averager circuit [50] and returning a third voltage [62] that is an inverse voltage of said second voltage [52] to said electric field-to-light-to-voltage converter [i.e., light source 20, or electro-optic material 31, or the electric field] to produce an output voltage [54] that is the root mean square voltage of said applied electric field.

Present Claim 12:

d) one or more circuits [e.g., 44, 48, 56 or 60,] interconnected with said averager circuit [50] for providing an output voltage [54] that is the root mean square voltage of said applied electric field.

The claims are clearly different. As is apparent, issued claim 1 requires an inverse ratiometric circuit 60 that produces a third voltage 62 that is returned to the electric field-to-light-voltage converter that has 1) a light source, 2) an opto-electric material, and an electric field to produce output voltage 54. Thus the third voltage 62 can to returned to the light source, or to the opto-electric material, or to

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<p align="center">TABLE 1 CLAIM COMPAISON</p>	
Claim 1 from '979	Claim 2 from current application compared to claim 1 of '979
<p>1. An opto-electric device for measuring the root mean square value of an alternating current voltage comprising:</p> <p>a) an electric field-to-light-to-voltage converter comprising:</p> <p>1) a light source;</p> <p>2) an electro-optic material:</p> <p>(a) receiving light from said light source;</p> <p>(b) modulating said light; and</p> <p>(c) providing a modulated light output;</p> <p>3) an electric field applied to said electro-optic crystal to modulate said light from said light source to produce said modulated light output;</p> <p>b) an optical receiver for receiving and converting said modulated output light from said electro-optic material to a first voltage that is proportional to a square of said electric field applied to said electro-optic material;</p> <p>c) an averager circuit receiving said first voltage and providing a second voltage that is proportional to the average of said square of said electric field over a period of time; and</p> <p>d) an inverse ratiometric circuit receiving said second voltage from said averager circuit and returning a third voltage that is an inverse voltage of said second voltage to said electric field-to-light-to-voltage converter to produce an output voltage that is the root mean square voltage of said applied electric field.</p>	<p>42. An opto-electric device for measuring the root mean square value of an alternating current voltage comprising:</p> <p>a) an electric field-to-light-to-voltage converter comprising:</p> <p>1) a light source;</p> <p>2) an electro-optic material:</p> <p>(a) receiving light from said light source;</p> <p>(b) modulating said light; and</p> <p>(c) providing a modulated light output;</p> <p>3) an electric field applied to said electro-optic crystal to modulate said light from said light source to produce said modulated light output;</p> <p>b) an optical receiver for receiving and converting said modulated output light from said electro-optic material to a first voltage that is proportional to a square of said electric field applied to said electro-optic material;</p> <p>c) an averager circuit receiving said first voltage and providing a second voltage that is proportional to the average of said square of said electric field over a period of time; and</p> <p>d) an inverse ratiometric circuit receiving said second voltage from said averager circuit and returning a third voltage that is an inverse voltage of said second voltage to said electric field-to-light-to-voltage converter to produce an output voltage that is the root mean square voltage of said applied electric field <u>and wherein said third voltage is used to control the intensity of said light source.</u></p>

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the electric field to produce the output voltage 54. On the other hand, claim 12 is broad and can use any of the circuits shown in Figs. 2-5. In Fig. 2, an inverse ratio circuit produces voltage 62 that is used to control the intensity of the light source 20. In Fig. 3, a inverse ratio circuit 60 and multiplier circuit 44 produce output 54. In Fig. 4, a divider circuit 48 produces output 54. In Fig. 5, a square root circuit 56 produces output 54. Although the device in Fig. 2 literally infringes both issued claim 1 and the present claim 12. The devices in Figs. 3, 4, and 5 do not literally infringe issued claim 1 in that they do not return voltage 62 to 1) the light source, or 2) the electro-optic material, or 3) the electric field of the electric field-to-light-to-voltage converter as required by the issued claim. The devices shown in Figs. 4 and 5 do not even require the production of third voltage 62 as required by the issued claim 1. Because devices such as those found in Figs. 3, 4, or 5 infringe claim 12 but do not infringe issued claim 1, issued claim 1 and present claim 12 do not define identically the same invention. As such claim 12 is allowable under 35 USC 101.

New Claim 21.

Claim 21 is newly presented. Basis for this claim can be found in present claim 2 and in issued claim 1 which includes all of the language found in new claim 21. As such, no new matter has been added and no new searching is believed to be required. Unlike present claim 2 and issued claim 1, new claim 21 includes the optical receiver 40 as part of the electric field-to-light-to-voltage converter 70 shown in Fig. 1. Because the device shown in Fig. 3 would infringe new claim 21 but not issued claim 1, this claim does not define identically the same invention as issued claim 1 and therefor is patentable under 35 U.S.C. 101.

10. Allowable Claims 5-7.

Applicants acknowledge the allowability of claims 5-7. It is also believed that claim 9 is allowable as this has been cited on the Office Action Summary as allowed and no rejections have been made of this claim.

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Conclusion

In view of the above, it is submitted that all claims are in condition for allowance. Claims 1-15 remain in the case. Claim 21 is newly presented. Claims 16-20 have been canceled. Reconsideration of the claims 1-15 and 21 is kindly requested and their allowance is kindly solicited.

If any questions should arise with respect to the above remarks, or if it would in any way expedite the prosecution of this case, applicants' attorney would appreciate a phone call at (614) 263-8990.

Respectfully submitted,

August 6, 2003
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CERTIFICATE OF MAILING (37 CFR 1.8)

I hereby certify that the correspondence identified above is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Commissioner of Patents, P.O. Box 1450, Alexandria VA 22313-1450 on August 6, 2003. Printed name of person signing: Mary L. Pollick

Signature Mary L. Pollick

ATTACHMENT A

mean³ (men)n. 1. Something having a position, quality, or condition midway between extremes; a medium. 2. *Mathematics*. A number that typifies a set of numbers, such as a geometric mean or an arithmetic mean. The average value of a set of numbers. 3. *Logic*. The middle term in a syllogism. 4. **means** n (used with a sing. or pl. verb. *A method, a course of action, or an instrument by which an act can be accomplished or an end achieved*). 5. **means** n (used with a pl. verb *Money, property, or other wealth*:). *You ought to live within your means*. Great wealth: *a woman of means*. **adj.** 1. Occupying a middle or intermediate position between two extremes. 2. Intermediate in size, extent, quality, time, or degree; medium. —**idiom.** **by all means**. Without fail; certainly. **by any means**. In any way possible; in any case: *not by any means an easy opponent*. **by means of**. With the use of; owing to: *They succeeded by means of patience and sacrifice*. **by no means**. In no sense; certainly not: *This remark by no means should be taken lightly*. [Middle English *mene*, middle, from Old French *meien*, from Latin *medianus*, from *medius*. See *medhyo-*.] **USAGE NOTES:** In the sense of "financial resources" *means* takes a plural verb: *His means are more than adequate*. In the sense of "a way to an end" *means* may be treated as either a singular or plural. It is singular when referring to a particular strategy or method: *The best means of securing the cooperation of the builders is to appeal to their self-interest*. It is plural when it refers to a group of strategies or methods: *The most effective means for dealing with the drug problem have generally been those suggested by the affected communities*. - *Means* is most often followed by *of*: *a means of noise reduction*. But *for*, *to*, and *toward* are also used: *a means for transmitting signals*; *a means to an end*; *a means toward achieving social equality*.¹

¹Excerpted from *American Heritage Talking Dictionary*. Copyright © 1997 The Learning Company, Inc. All Rights Reserved.